

Monitoring of the Crab Nebula with Chandra and other observatories including HST

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Subsequent to the detections AGILE and Fermi/LAT of the gamma-ray flares from the Crab Nebula in the fall of 2010, this team has been monitoring the X-Ray emission from the Crab on a regular basis. X-Ray observations have taken place typically once per month when viewing constraints allow and more recently four times per year. There have been notable exceptions, e.g. in April of 2011 and March 2013 when we initiated a set of Chandra Target of opportunity observations in conjunction with bright gamma-ray flares. For much of the time regular HST observations were made in conjunction with the Chandra observations. The aim of this program to further characterize, in depth, the X-Ray and optical variations that take place in the nebula, and by so doing determine the regions which contribute to the harder X-ray variations and, if possible, determine the precise location within the Nebula of the origin of the gamma-ray flares. As part of this project members of the team have developed Singular Value Decomposition techniques to sequences of images in order to more accurately characterize features. The current status of the project will be presented highlighting studies of the inner knot and possible correlations with the flares.